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Material Safety Data Sheet

SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Identifier As Used On Label: **"44" ROSIN FLUX CORED SOLDER**

Product Use: Soldering flux in cored solder for electrical or electronic applications.

Manufacturer's Name and Address

KESTER SOLDER
DIVISION OF LITTON SYSTEMS, INC.
515 E. TOUHY AVENUE
DES PLAINES, IL 60018 USA

Supplier's Name and Address (if different from manufacturer)

Telephone Number For Information: (847) 297-1600

CHEMTREC 24-Hour Emergency Telephone Number: (800) 424-9300

NA = Not Applicable NE = Not Established UN = Unknown

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS 1 % or greater CARCINOGENS 0.1 % or greater	C.A.S. Number	Weight Percent	OSHA PEL mg/m³	ACGIH TLV TWA mg/m³	LD 50 ingested g / Kg	LC 50 inhaled g / m³
Lead	7439-92-1 *	**	0.05	0.15	NE	NE
Tin	7440-31-5	**	2	2	NE	NE
Silver	7440-22-4 *	**	0.01	0.1	NE	NE
Bismuth	7440-69-9	**	NE	NE	NE	NE
Antimony	7440-36-0 *	**	0.5	0.5	7.0 Rat	NE
Rosin	8050-09-7	< 3	NE	NE	NE	NE

NON-HAZARDOUS INGREDIENTS

OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
ACGIH: American Conference of Government Industrial Hygienists
TLV: Threshold Limit Values
STEL: Short-Term Exposure Limit
TWA: Time Weighted Average
C.A.S. Chemical Abstract Service

NOTES: * See Section 15 for U.S.A. Regulatory Information.

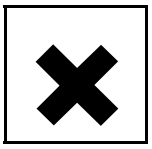
** Composition and weight % of solder alloys varies widely and can be determined by product label. Flux in core is typically 1-3% by weight.

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Hot solder can burn eyes and skin. Fumes during soldering are irritating to eyes and may cause headache and respiratory system irritation or damage. Prolonged or repeated exposure to rosin flux fumes during soldering may result in allergic reaction in a sensitive person, resulting in asthma symptoms.

ECC (Europe) DANGEROUS SUBSTANCES HAZARD DESIGNATION:



Xn Harmful

R-PHRASES (Risks to Humans or the Environment):

R 61 - May cause harm to the unborn child.

R 62 - Possible risk of impaired fertility.

R 33 - Danger of cumulative effects.

R 36/37/38 - Irritating to eyes, respiratory system and skin.

PRIMARY EXPOSURE:

Fumes during soldering may contain droplets of rosin and/or other organic decomposition products. Skin contact from handling and decomposition products when heating with soldering iron.

PRIMARY ROUTES OF ENTRY: ○ Skin ◉ Eyes ◉ Inhalation ◉ Ingestion

TARGET ORGANS:

Flux fumes: eyes, mucous membranes and respiratory system. Ingestion of lead metal can affect kidneys, gastrointestinal, reproductive and neurological systems.

POTENTIAL HEALTH EFFECTS OF ACUTE (severe short-term) EXPOSURE:

INHALATION: Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.

EYE CONTACT: Irritation from contact with smoke from soldering.

SKIN CONTACT: Possible local irritation by contact with flux or fumes.

INGESTION: May be harmful if swallowed.

SKIN ABSORPTION: None.

POTENTIAL HEALTH EFFECTS OF CHRONIC (prolonged) EXPOSURE:

Smoke during soldering will contain rosin which is an allergen that can cause eye irritation and respiratory system irritation and damage. Repeated inhalation or ingestion of lead can result in systemic poisoning.

Medical Conditions Generally Aggravated by Exposure:

Chemical hypersensitivity, asthma and other respiratory conditions, existing eye and skin disorders. Lead: Diseases of the blood and blood-forming organs, kidneys, nerves and possibly reproductive systems.

CARCINOGENICITY/ TERATOGENICITY / MUTAGENICITY: ○ NTP ○ OSHA ◉ IARC ○ Not Listed

See Sections 11 and 15 for additional information.

SECTION 4 - FIRST AID MEASURES

Seek medical assistance for further treatment, observation and support if needed.

EYE CONTACT: For burns flush immediately with cool water and get medical attention. For fume irritation use eye drops and remove from exposure.

SKIN CONTACT: For burns flush immediately with cool water. If a rash develops from flux fumes, remove person from exposure and wash skin with soap and water.

INHALATION: Remove person from exposure to fumes.

INGESTION: Not likely to occur.

SECTION 5 - FIRE FIGHTING MEASURES

Flammability: ◉ No ○ Yes Conditions to avoid: NE

Flash Point (T.O.C): NA °F NA °C Auto-Ignition Temperature: NA °F NA °C

Flammability Limits percent by volume in air: LEL: NA UEL: NA

Extinguishing Means: ○ Water ○ Carbon Dioxide ○ Alcohol Foam ○ Dry Chemical

Hazardous Combustion Products: Carbon monoxide, carbon dioxide. Melted solder above 1000 °F will liberate toxic lead and/or antimony fumes.

Explosion Sensitivity: Impact - None Identified Static Discharge Sensitivity: ○ Yes ◉ No

Special Firefighting Procedures: Avoid breathing smoke. Wear self-contained breathing apparatus if this material is in the vicinity of a fire.

Unusual Fire and Explosion Hazards: Flux in cored solder may ignite when the solder melts in a fire.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Steps to be Taken if Material is Spilled or Released:

Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

SECTION 7 - HANDLING AND STORAGE

Storage Precautions: Exposure to sulfur or to high humidity will tarnish the solder surface.

Handling Precautions: Do not place flux-cored solder into a hot solder pot because the flux may ignite.

Personal Precautions: Avoid breathing smoke / fumes generated during soldering. Wash hands after handling solder before eating or smoking.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

VENTILATION TO BE USED: Provide adequate exhaust ventilation (general and / or local) if necessary to meet exposure requirements. Local exhaust ventilation is preferred to minimize dispersion of smoke and fumes into the work area.

Respiratory Protection: When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator or self-contained breathing apparatus should be worn.

Protective Gloves: Wear rubber or cloth gloves to avoid skin contact.

Eye Protection: Safety glasses or goggles should be used.

Other Protective Clothing and Equipment: None.

Hygienic Work Practices: Wash hands thoroughly after handling chemicals or solder containing lead before eating or smoking.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State at 20 °C: Solid

Boiling Point (760 mm Hg): NA °F NA °C

Vapor Pressure (mm Hg at 20 °C): ND

Vapor Density (air = 1): NA

Solubility in Water (% by weight): 0

pH: NA

Freezing Point (760 mm Hg): NA °F NA °C

Specific Gravity (water = 1 at 25 °C): >7

Melting Point: >212 °F >100 °C

Evaporation Rate (butyl acetate = 1): NA

Percent Volatile (by volume): 0 %

Volatile Organic Compound (VOC): NA g / Liter

Odor Threshold: NE

Coefficient of Water / Oil Distribution: NE

Appearance and Odor: Silver-gray metal in wire, ribbon or preformed shapes with a core of flux, no odor.

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability: ◉ Stable ○ Unstable Conditions to avoid: NE

Incompatibility (materials to avoid): Strong acid, strong oxidizers

Hazardous Decomposition Products:

When heated to soldering temperatures, the rosin may be thermally degraded to liberate aliphatic aldehydes, acids and terpenes. No lead or antimony are detected in fumes from soldering below 1000 °F (537 °C).

HAZARDOUS POLYMERIZATION:

○ May Occur
◉ Will Not Occur

Conditions to avoid: Not applicable.

SECTION 11 - TOXICOLOGICAL INFORMATION

EXPOSURE LIMITS: Not determined for the product. See Section 2 for ingredients

Lead can accumulate in bone and body organs, and elimination from the body is slow. Medical examinations are advised for persons repeatedly exposed to levels above the exposure limit for lead. Lead is classified as a Group 2B carcinogen by the International Agency for Research on Cancer (IARC) and the U.S. Environmental Protection Agency (EPA). Women of child bearing age should avoid chronic exposure to lead because of possible effects on reproduction and potential injury to a developing fetus.

SECTION 12 - ECOLOGICAL INFORMATION

Keep out of waterways.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Methods:
Solder can be reclaimed.

CAUTION: Empty containers may contain product residue. Observe all label precautions.

SECTION 14 - TRANSPORT INFORMATION

DOT (U.S.A.): Not Regulated

TDG (Canada): Not Regulated

SECTION 15 - REGULATORY INFORMATION

U.S.A.: All Chemical substances in this product are listed in the EPA (Environmental Protection Agency) TSCA (Toxic Substances Control Act) Inventory.

USEPA - Lead and its compounds are placed in Class B2, probably carcinogenic to humans.
IARC - Lead and its compounds are placed in Class 2B, possibly carcinogenic to humans.
*This chemical is subject to the reporting requirements of Section 313 of Title III of the USA Superfund Amendment and Reauthorization Act (SARA) of 1986 and 40 CFR, Part 372.

California Proposition 65: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Canada: WHMIS (Workplace Hazardous Materials Information System) CLASSIFICATION:

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Product Regulations (CPR) and the MSDS contains all the information required by the CPR.

D2A

Europe: European Council Directive 67/548/EEC

- DANGEROUS SUBSTANCES HAZARD CLASSIFICATION: T - Toxic Xn - Harmful
- R-PHRASES (Risks to Humans or the Environment)

  R 61 - May cause harm to the unborn child.
  R 62 - Possible risk of impaired fertility.
  R 33 - Danger of cumulative effects.
  R 36/37/38 - Irritating to eyes, respiratory system and skin.

- S-PHRASES (Safety Precautions for Storing, Handling and Using the Product)

  S 2 - Keep out of reach of children.
  S 20/21 - When using do not eat, drink or smoke.
  S 23 - Do not breathe the fumes.

SECTION 16 - OTHER INFORMATION

NFPA Rating:	Health:	1	Flammability:	1	Reactivity:	0	Special:
HMIS Rating:	Health:	1	Flammability:	1	Reactivity:	0	Personal Protection: X

PREPARATION INFORMATION

Revision Summary: Change of format and new data in most sections.

Prepared By: D. Bernier
Telephone Number: (847) 297-1600
Date Prepared: 31-Aug-01
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